REMARKS/ARGUMENTS

Claims 1-7, 11-65, 80, 82, 84, 86, 88, 90 and 92-96 are pending in this application. Of these claims, nos. 1-4, 6, 7, 13-22, 24-26, 29-31, 35-46 and 90 are under examination and have been rejected. The remaining claims, nos. 5, 11-12, 23, 27, 28, 32-34, 47-65, 80, 82, 84, 86, 88, 90 and 92-96, have been withdrawn by the Examiner from further consideration in this application.

Claim Rejections Under 35 U.S.C. §103

In the Office Action, the Examiner contains to maintain her previous rejection of claims 1-4, 6, 7, 13-17, 19-22. 24-26, 29-31, 35-46 and 90 under 35 USC §103 over Mirkin et al. US 2002/0127574 ("Mirkin I") in view of Kotov USP 7,045.087. This rejection is respectfully traversed.

In essence, the Examiner argues on p. 3 of the Office Action that Mirkin I discloses a functional element as recited in applicants' present claim 1 – with the exception that the reference fails to teach the bonding agent being a plasma layer with charged chemically reactive groups. Therefore, the Examiner has combined Mirkin I with Kotov to reject, *inter alia*, applicants' claim 1. At p. 3 of the Office Action the Examiner alleges that Kotov teaches a functional element wherein the bonding agent is a plasma layer with charged chemically reactive groups. Kotov is thus combined with Mirkin I in an effort to supply an important element of applicants' functional element (as recited in claim 1), which is missing from the disclosure contained in Mirkin I.

In their previous response dated May 5, 2008, applicants traversed the identical rejection with the argument that the Kotov reference discloses the use of a polymeric bonding agent, and not the use of a plasma layer with charged chemically reactive groups as a bonding agent. Those earlier arguments are incorporated by reference into this present response.

In response to applicants' contention that Kotov does not describe a bonding layer comprised of a plasma layer with charged chemically reactive groups and thus the combination of Kotov with Mirkin I would not produce a functional element as recited, e.g., in claim 1, the Examiner cites on p. 7 of the Office Action to the teachings contained at p. 18, second paragraph, of applicants' specification. She alleges that applicants teach therein that, "a polyelectrolyte layer is a plasma layer with charged reactive groups". Applicants, however, respectfully reiterate their

previous contention that in arriving at the above conclusion the Examiner is misinterpreting the teachings contained in their specification (i.e., at p. 18). As explained below, applicants submit that the disclosure contained at, e.g., p. 18 of their specification would clearly indicate to one having an ordinary degree of skill in this field of art that the plasma-formed layer as recited in claim 1 of the present application is entirely separate and distinct, in both its structure and properties from the corresponding layer taught by Kotov. That is, while both the claimed bonding layer and the layer taught for use in Kotov may contain charged groups, i.e., polyelectrolytes, there are significant differences in both the structure and the properties of the two different 'types' or 'forms' of layer which clearly distinguish applicants' claimed plasma-formed layer from the layer described in Kotov.

A fundamental difference between the bonding layers recited in claim 1 and those described in Kotov is that, while both the layers recited in claim 1 and the layers described in Kotov may exhibit charged groups, i.e., polyelectrolytes, the layers used in the presently claimed functional element are "plasma layers", i.e., layers formed by plasma technology. In contrast, the layers according to Kotov are so-called "LBL layers", i.e., layers produced by layer by layer technology, which does not involve or include any plasma-related technology. That is, notwithstanding as indicated above that both applicants' claimed plasma-formed layer and the layer of Kotov can include polyelectrolytes (and, thus, may be considered as "polyelectrolyte layers" – although this term is not used in, e.g., claim 1), the method of making the layers in each case is completely different. When plasma technology is used, i.e., in forming the layer(s) in accordance with claim 1, the polyelectrolytes are formed into a layer having a different structure and properties from that of a layer formed via the "LBL" process, i.e., according to the teachings contained in the Kotov reference. Further details regarding these differences are discussed below.

With the use of plasma technology (as recited, e.g., in claim 1) the monomers are cross-linked to form polymers in the one and only layer thus formed. To assist the Examiner in understanding the formation of polyelectrolyte layers by such direct plasma polymerization (see, e.g., claim 1) applicants are providing with this response a print-out from the internet web-site of the Fraunhofer Institute for Applied Polymer Research (http://www.polymer-surface.com/examples/polyelectrolyte.html) which sets forth a definition for "polyelectrolytes" and "ionic plasma layers". The internet print-out, in addition, illustrates that plasma technology is one way, amongst others, to produce layers from polyelectrolytes, i.e., in accordance with the

teachings contained at p. 18 of the present specification. In contrast, however, to the plasma-formation methodology recited in applicants' claim 1, Kotov discloses at, for example, col. 3, lines 56-58, "cross-linking amongst the layers to improve the mechanical properties of the films." (emphasis supplied by applicants). Thus, unlike in the case of the present invention the process described by the Kotov reference proceeds in two separate steps. In a first such step, the layers are formed using layer-by-layer technology as described, for example, according to steps (i) to (iv) recited in Kotov claim 1. Then, in a second phase referred to above, a cross-linking takes place "amongst the [separate] layers" for the purpose of improving the film's mechanical properties. This, then, is not a cross-linking taking place within a single layer (i.e., to form polymers from monomers), as is the case in the presently claimed functional element. One having an ordinary level of skill in this field would immediately recognize from the disclosure contained in Kotov that there is no teaching or suggestion to utilize plasma technology for forming the layers described therein. Instead, the reference teaches only the use of "liquid" technology, i.e., in the layer-by-layer process for forming the plurality of such layers that are, thereafter, crosslinked.

As pointed out above, moreover, the different methodology (plasma) used by applicants, in contrast to Kotov (liquid; layer-by-layer), for forming the bonding layer(s), leads to significant differences in the structure and properties of the subject layers. For instance, the plasma bonding layer, i.e., in accordance with claim 1, are known to be highly irregular and, in addition, they have an amorphous structure. See, e.g., USP 5,000,831 (copy also enclosed) at col. 1, lines 6-9 in support of the above characterization of a plasma-formed layer. The '831 patent discloses the use of plasma technology as is used in forming the bonding layer as recited in applicants' claim 1. In contrast, layers formed by the layer-by-layer methodology taught for use in Kotov, are typically regular (as opposed to the irregular plasma-formed layers) and have crystalline structures (i.e., in contrast to the amorphous structure of plasma-formed layers), wherein the crystalline structure is due to the linear nature of the polymer chains used in forming the layers. This distinction is, furthermore, supported by the disclosure contained in Kotov col. 1, lines 53-56 which state that, "LBL . . . is especially suitable for the production of stratified thin films in which layers of nanometer thickness are organized in a specific predetermined order." This "regular" order of the layers is also schematically shown in Figures 1-3 of the Kotov reference. The above-noted differences in the structure(s) of the layers not unexpectedly leads to significant differences in the properties of the subject bonding layers as well.

For the reasons provided above, therefore, claim 1 in its present form is believed to distinguish the claimed element recited therein over the combination of Mirkin I and Kotov. The Examiner is thus respectfully requested to reconsider and withdraw the rejection of claim 1, based on the cited combination of references. Moreover, as the remaining claims included in this rejection all depend, directly or indirectly, from claim 1 and thus contain all of the features recited therein, these claims are also believed to be distinguishable for the same reasons as claim 1.

Further to the above on p. 6 of the Office Action claim 18 is again rejected under 35 U.S.C. 103 over Mirkin I in view of Kotov and further in view of Mirkin et al US 2002/0132371 ("Mirkin II"). This rejection was discussed at p. 17 of applicants' May 5, 2008 Amendment and those remarks are incorporated herein by reference. In summary, Mirkin II completely fails to disclose or suggest the element(s) of applicants' element as recited in claim 1 that is missing from both Mirkin I and from Kotov, i.e., a plasma-generated bonding layer with charged chemically reactive groups. Since claim 18 depends (indirectly) from claim 1, it includes all of the features recited in the subject claim. Thus, since even the combination of Mirkin I, Mirkin II and Kotov do not disclose, *inter alia*, such a plasma-generated bonding layer with charged chemically reactive groups, the subject matter recited in claim 18 is neither taught or even suggested by the cited combination of references. The Examiner is, therefore, respectfully requested to reconsider and withdraw the rejection of claim 18 as well.

Summary

The Examiner, therefore, is requested to withdraw all of the pending rejections of the claims and to issue a Notice of Allowance with regard to all of the claims under examination in this application.

THIS CORRESPONDENCE IS BEING SUBMITTED ELECTRONICALLY THROUGH THE PATENT AND TRADEMARK OFFICE EFS FILING SYSTEM ON October 14, 2008.

MAF:stb

Respectfully submitted,

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